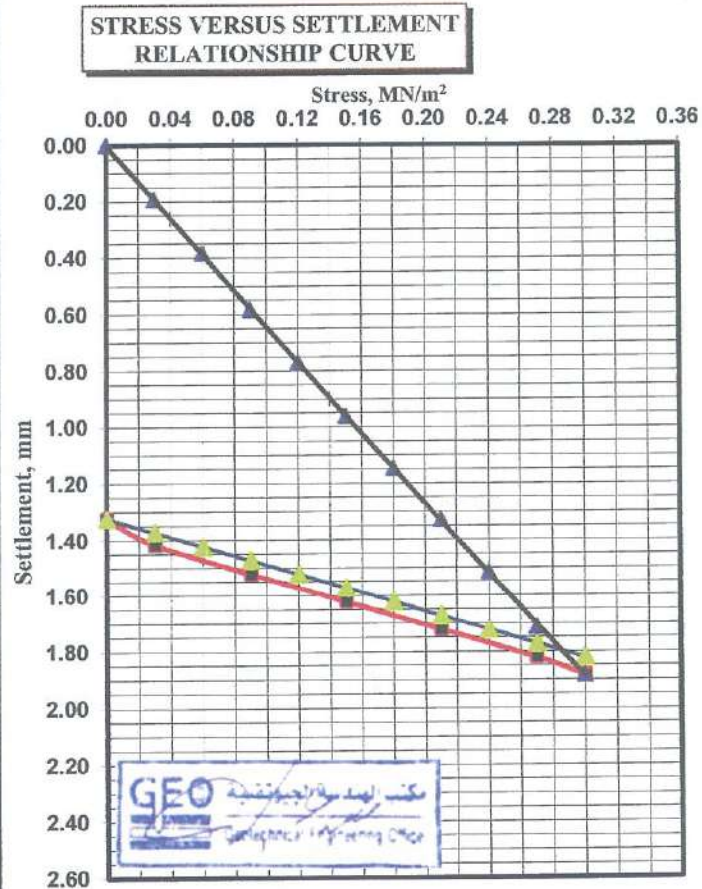


Plate Load Tests of Soils
DIN 18134

CLIENT شركة الفتح
PROJECT Electric Express Train
LOCATION Al-Glala (483+700)→(483+725) (level +0.50m)
PLATE LOAD NO. PLT-746
PLATE DIAMETER (cm) 75.00
TYPE OF SOIL Silty SAND with gravel

TIME START: 12:00 PM
TIME FINISH: 1:00 PM
DATE 11-Jun-23
LAB. REF. 06018
**** Note : Soil is Wet**

Stress MN/m ²	Settlement mm
0.00	0.00
0.03	0.19
0.06	0.38
0.09	0.58
0.12	0.77
0.15	0.96
0.18	1.15
0.21	1.33
0.24	1.52
0.27	1.71
0.30	1.89
0.27	1.82
0.21	1.72
0.15	1.62
0.09	1.52
0.03	1.42
0.00	1.32
0.03	1.37
0.06	1.42
0.09	1.47
0.12	1.52
0.15	1.57
0.18	1.62
0.21	1.67
0.24	1.72
0.27	1.77
0.30	1.82



STRAIN MODULUS, E_v

	1 st loading	2 Id loading
σ_{0max}	0.30	0.30
a_1 [mm/(MN/m ²)]	6.512	1.667
a_2 [mm/(MN ² /m ⁴)]	-0.67	0
E_v [MN/m ²]	89.1	337.4
E_{v2}/E_{v1}	3.79	

Apparatus

1. Loading plates consists of 750 mm
2. The thickness of plates 25 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Proving Ring for plate load 250 KN

MODULUS OF SUB-GRADE REACTION, K_s

$$k_s = \Delta\sigma / \Delta s \quad 159.2 \quad \text{MN/m}^3$$

FA-P-17

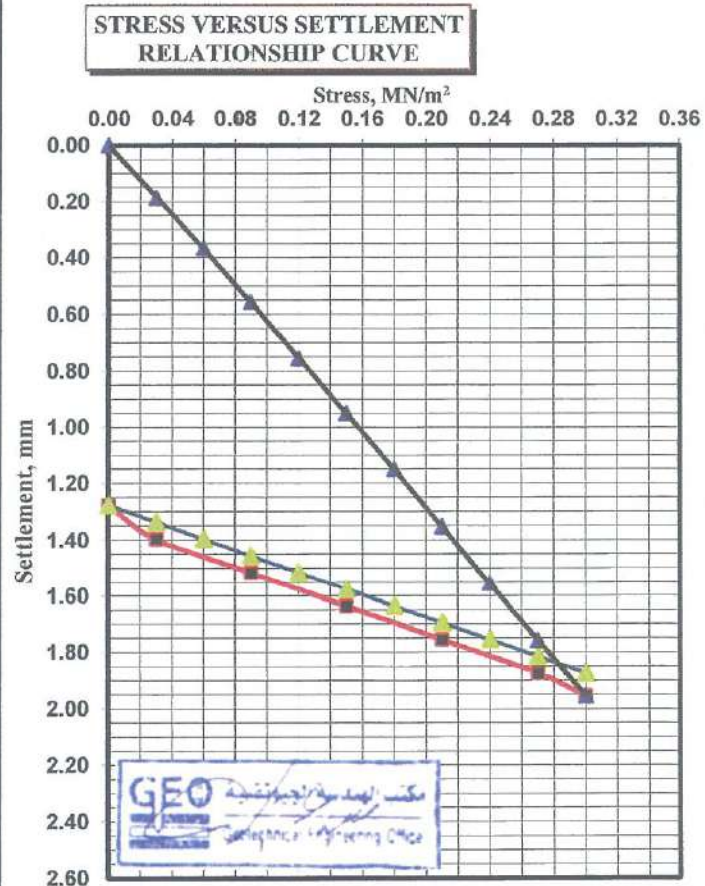
Plate Load Tests of Soils
DIN 18134

CLIENT شركة الفتح
PROJECT Electric Express Train
LOCATION Al-Glala (483+750) → (483+775) (level +0.50m)
PLATE LOAD NO. PLT-748
PLATE DIAMETER (cm) 75.00
TYPE OF SOIL Silty SAND with gravel

TIME START: 9:00 AM
TIME FINISH: 10:00 AM
DATE 12-Jun-23
LAB. REF. 06018

**** Note : Soil is Wet**

Stress MN/m ²	Settlement mm
0.00	0.00
0.03	0.19
0.06	0.37
0.09	0.56
0.12	0.76
0.15	0.95
0.18	1.15
0.21	1.35
0.24	1.56
0.27	1.76
0.30	1.96
0.27	1.88
0.21	1.76
0.15	1.64
0.09	1.52
0.03	1.40
0.00	1.28
0.03	1.34
0.06	1.40
0.09	1.46
0.12	1.52
0.15	1.58
0.18	1.64
0.21	1.70
0.24	1.76
0.27	1.82
0.30	1.88



STRAIN MODULUS, E_v

	1 st loading	2 Id loading
σ_{0max}	0.30	0.30
a_1 [mm/(MN/m ²)]	6.145	2
a_2 [mm/(MN ² /m ⁴)]	1.334	0
E_v [MN/m ²]	85.9	281.3
E_{v2}/E_{v1}	3.27	

Apparatus

1. Loading plates consists of 750 mm
2. The thickness of plates 25 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Proving Ring for plate load 250 KN

MODULUS OF SUB-GRADE REACTION, K_s

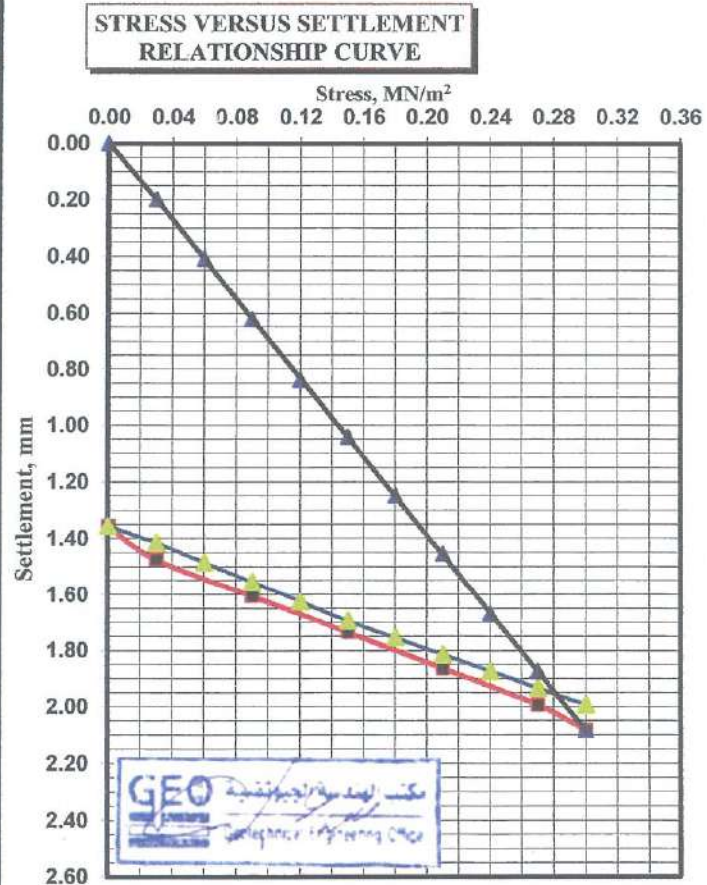
$$k_s = \Delta\sigma / \Delta s \quad 152.8 \quad \text{MN/m}^3$$

Plate Load Tests of Soils
DIN 18134

CLIENT شركة الفتح
PROJECT Electric Express Train
LOCATION Al-Glala (483-775) → (483+800) (level +0.50m)
PLATE LOAD NO. PLT-749
PLATE DIAMETER (cm) 75.00
TYPE OF SOIL Silty SAND with gravel

TIME START: 10:00 AM
TIME FINISH: 11:00 AM
DATE 12-Jun-23
LAB. REF. 06918
**** Note : Soil is Wet**

Stress MN/m ²	Settlement mm
0.00	0.00
0.03	0.20
0.06	0.41
0.09	0.62
0.12	0.84
0.15	1.04
0.18	1.25
0.21	1.46
0.24	1.67
0.27	1.88
0.30	2.09
0.27	2.00
0.21	1.87
0.15	1.74
0.09	1.61
0.03	1.48
0.00	1.36
0.03	1.42
0.06	1.49
0.09	1.56
0.12	1.63
0.15	1.70
0.18	1.76
0.21	1.82
0.24	1.88
0.27	1.94
0.30	2.00



STRAIN MODULUS, E_v

Apparatus

	1 st loading	2 Id loading
σ_{0max}	0.30	0.30
a_1 [mm/(MN/m ²)]	7.042	2.357
a_2 [mm/(MN ² /m ⁴)]	-0.152	-0.704
E_v [MN/m ²]	80.4	262.1
E_v2/E_v1	3.26	

1. Loading plates consists of 750 mm
2. The thickness of plates 25 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Proving Ring for plate load 250 KN

MODULUS OF SUB-GRADE REACTION, K_s

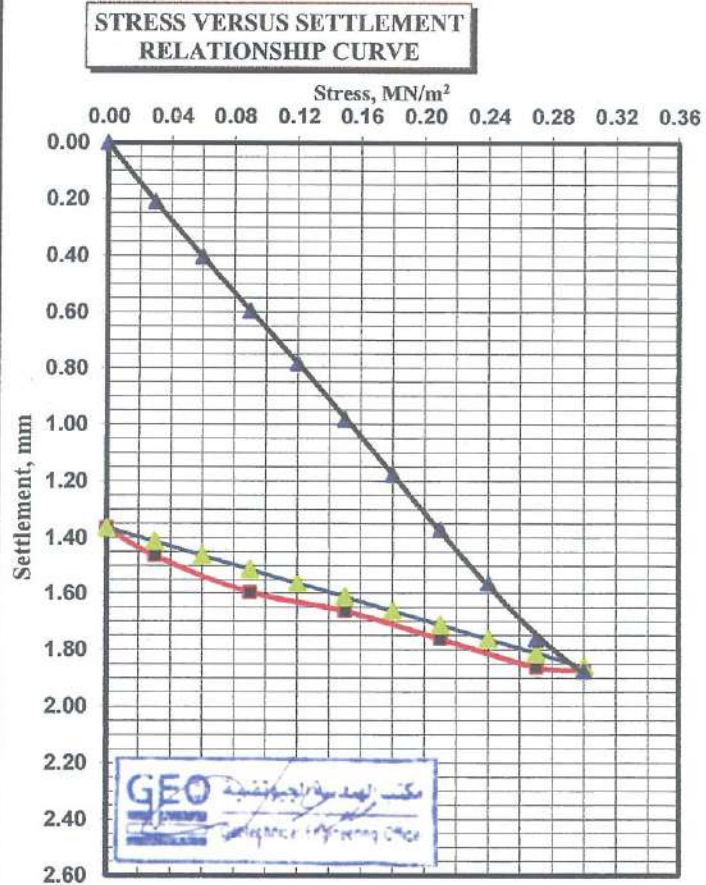
$$k_s = \Delta\sigma' / \Delta s \quad 144.0 \quad \text{MN/m}^3$$

Plate Load Tests of Soils
DIN 18134

CLIENT شركة الفتح
PROJECT Electric Express Train
LOCATION Al-Ghala (483+800)→(483+825) (level +0.50m)
PLATE LOAD NO. PLT-750
PLATE DIAMETER (cm) 75.00
TYPE OF SOIL Silty SAND with gravel

TIME START: 11:00 AM
TIME FINISH: 12:00 PM
DATE 12-Jun-23
LAB. REF. 06018
**** Note : Soil is Wet**

Stress MN/m ²	Settlement mm
0.00	0.00
0.03	0.21
0.06	0.40
0.09	0.60
0.12	0.78
0.15	0.98
0.18	1.18
0.21	1.37
0.24	1.56
0.27	1.76
0.30	1.88
0.27	1.86
0.21	1.76
0.15	1.66
0.09	1.60
0.03	1.46
0.00	1.36
0.03	1.41
0.06	1.46
0.09	1.51
0.12	1.56
0.15	1.61
0.18	1.66
0.21	1.71
0.24	1.76
0.27	1.81
0.30	1.86



STRAIN MODULUS, Ev

	1 st loading	2 Id loading
σ_{0max}	0.30	0.30
$a_1 [mm/(MN/m^2)]$	6.85	1.667
$a_2 [mm/(MN^2/m^4)]$	-1.595	0
$Ev [MN/m^2]$	88.3	337.4
$Ev2/Ev1$	3.82	

Apparatus

1. Loading plates consists of 750 mm
2. The thickness of plates 25 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Proving Ring for plate load 250 KN

MODULUS OF SUB-GRADE REACTION, Ks

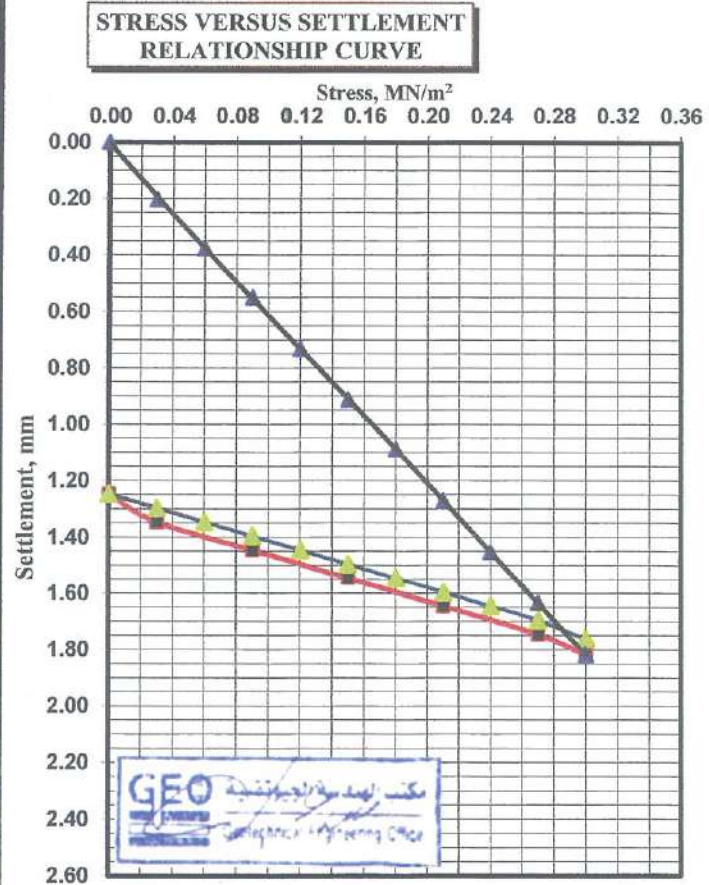
$$k_s = \Delta\sigma/\Delta s \quad 157.6 \quad MN/m^3$$

Plate Load Tests of Soils
DIN 18134

CLIENT شركة الفتح
PROJECT Electric Express Train
LOCATION Al-Ghala (483+825) → (483+850) (level +0.50m)
PLATE LOAD NO. PLT-751
PLATE DIAMETER (cm) 75.00
TYPE OF SOIL Silty SAND with gravel

TIME START: 12:00 PM
TIME FINISH: 1:00 PM
DATE 12-Jun-23
LAB. REF. 06018
**** Note : Soil is Wet**

Stress MN/m ²	Settlement mm
0.00	0.00
0.03	0.20
0.06	0.38
0.09	0.55
0.12	0.73
0.15	0.91
0.18	1.09
0.21	1.27
0.24	1.45
0.27	1.63
0.30	1.82
0.27	1.75
0.21	1.65
0.15	1.55
0.09	1.45
0.03	1.35
0.00	1.25
0.03	1.30
0.06	1.35
0.09	1.40
0.12	1.45
0.15	1.50
0.18	1.55
0.21	1.60
0.24	1.65
0.27	1.70
0.30	1.76



STRAIN MODULUS, Ev

	1 st loading	2 Id loading
σ_{0max}	0.30	0.30
a_1 [mm/(MN/m ²)]	5.8	1.629
a_2 [mm/(MN ² /m ⁴)]	0.583	0.179
E_v [MN/m ²]	94.1	334.3
E_{v2}/E_{v1}	3.55	

Apparatus

1. Loading plates consists of 750 mm
2. The thickness of plates 25 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Proving Ring for plate load 250 KN

MODULUS OF SUB-GRADE REACTION, Ks

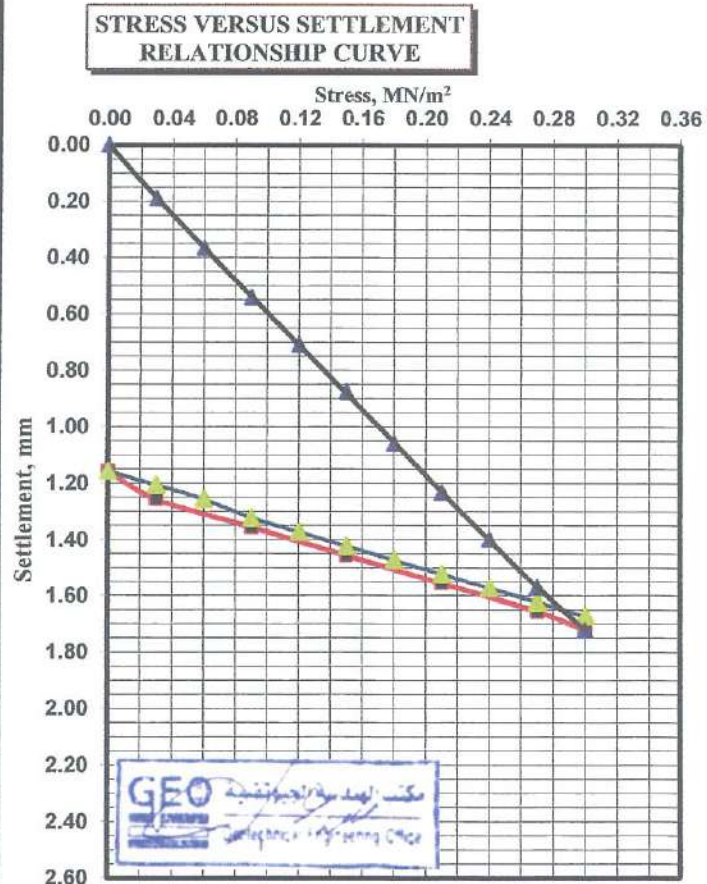
$$k_s = \Delta\sigma / \Delta s \quad 164.0 \quad \text{MN/m}^3$$

Plate Load Tests of Soils
DIN 18134

CLIENT شركة الفتح
PROJECT Electric Express Train
LOCATION Al-Glala (483+850)→(483+875) (level +0.50m)
PLATE LOAD NO. PLT-752
PLATE DIAMETER (cm) 75.00
TYPE OF SOIL Silty SAND with gravel

TIME START: 12:00 PM
TIME FINISH: 1:00 PM
DATE 12-Jun-23
LAB. REF. 06018
**** Note : Soil is Wet**

Stress MN/m ²	Settlement mm
0.00	0.00
0.03	0.19
0.06	0.37
0.09	0.54
0.12	0.71
0.15	0.88
0.18	1.06
0.21	1.23
0.24	1.40
0.27	1.57
0.30	1.72
0.27	1.66
0.21	1.56
0.15	1.46
0.09	1.36
0.03	1.26
0.00	1.16
0.03	1.21
0.06	1.26
0.09	1.32
0.12	1.37
0.15	1.42
0.18	1.47
0.21	1.52
0.24	1.57
0.27	1.62
0.30	1.67



STRAIN MODULUS, Ev

	1 st loading	2 Id loading
σ_{0max}	0.30	0.30
$a_1 [mm/(MN/m^2)]$	5.957	1.773
$a_2 [mm/(MN^2/m^4)]$	-0.759	-0.238
$Ev [MN/m^2]$	98.2	330.6
$Ev2/Ev1$	3.37	

Apparatus

1. Loading plates consists of 750 mm
2. The thickness of plates 25 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Proving Ring for plate load 250 KN

MODULUS OF SUB-GRADE REACTION, Ks

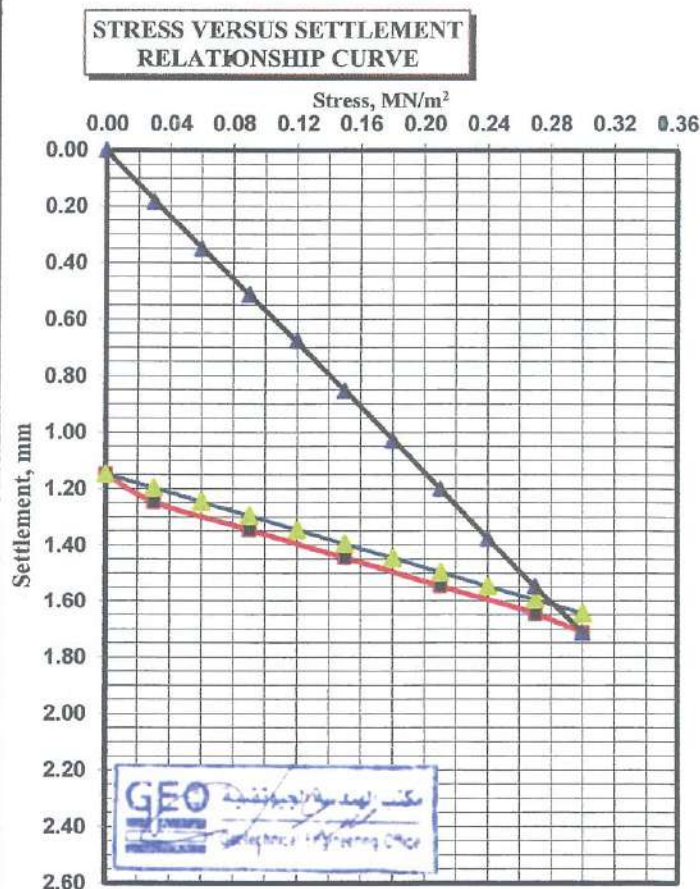
$$k_s = \Delta\sigma/\Delta s \quad 173.6 \quad MN/m^3$$

Plate Load Tests of Soils
DIN 18134

CLIENT شركة الفتح
PROJECT Electric Express Train
LOCATION Al-Glala (483+875)→(483+900) (level +0.50m)
PLATE LOAD NO. PLT-753
PLATE DIAMETER (cm) 75.00
TYPE OF SOIL Silty SAND with gravel

TIME START: 2:00 PM
TIME FINISH: 3:00 PM
DATE 12-Jun-23
LAB. REF. 06018
**** Note : Soil is Wet**

Stress MN/m ²	Settlement mm
0.00	0.00
0.03	0.18
0.06	0.35
0.09	0.51
0.12	0.68
0.15	0.85
0.18	1.03
0.21	1.20
0.24	1.38
0.27	1.55
0.30	1.71
0.27	1.65
0.21	1.55
0.15	1.45
0.09	1.35
0.03	1.25
0.00	1.15
0.03	1.20
0.06	1.25
0.09	1.30
0.12	1.35
0.15	1.40
0.18	1.45
0.21	1.50
0.24	1.55
0.27	1.60
0.30	1.65



STRAIN MODULUS, Ev

	1 st loading	2 Id loading
σ_{0max}	0.30	0.30
a_1 [mm/(MN/m ²)]	5.585	1.667
a_2 [mm/(MN ² /m ⁴)]	0.4	0
E_v [MN/m ²]	98.6	337.4
E_{v2}/E_{v1}	3.42	

Apparatus

1. Loading plates consists of 750 mm
- 2 The thickness of plates 25 mm
- 3 Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Proving Ring for plate load 250 KN

MODULUS OF SUB-GRADE REACTION, Ks

$$k_s = \Delta\sigma / \Delta s \quad 175.2 \quad \text{MN/m}^3$$

Contractor Company		Designer Company																	
Issued by Contractor	Name	Date	Time																
	Eng/ <i>Karama</i>	7/3/2023																	
Received by ER		MIR	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>C1</td><td>C2</td><td>C3</td><td>DD</td><td>MM</td><td>YY</td><td>HH</td><td>MM</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	C1	C2	C3	DD	MM	YY	HH	MM								
C1	C2	C3	DD	MM	YY	HH	MM												

CODE-1	S1 to S21 Station Reference	D1 to S3 Depot Reference	Kp XXX Note For Kilometer point only Start Km is used
CODE - 2	Work Activity		
CODE - 3	Sub Element of Activity		

Description of Materials	Fill material results				
Location to be Used	483+740 484+000 PSG1 483+640 483+740 PSG1 483+040 483+240 PSG1 483+240 483+440 PSG1 483+440 483+640 PSG1 481+000 481+260 PSG1				
MAR Approval No			Date		
Supplier Name					
Test Requirement	Specification		Clause		
Reference Photos	Yes attached / No		Other		
Item	Description	Unit	Quantity	Arrival Date	Note
1	C.B F	m3	5000		
2					
3					
4					
Comments by:		Comments by:			
A sample has been taken from fill material by SGAC office to (COMIBASSAL) lab and the results founded meet the specifications and accepted					
APPROVAL STATUS					
Organisation	Name	Sign	Date	A-AWC-R	
Contractor	<i>Karama</i>	<i>Karama</i>			
QA/QC *	<i>M. Abdel</i>	<i>M. Abdel</i>			
GARB**	<i>M. Hegem</i>	<i>M. Hegem</i>			
Comment by ER					
Employers Representative					

* Designer
** Alignment / Bridges Culvert Only

FA-M-64

MATERIAL INSPECTION REQUEST					
	الهيئة العامة للطرق والكباري (GARB)	وزارة النقل Ministry of Transport and Public Works	مركز الاستشارات الهندسية للطرق والمطارات والممرات (إدارة الجسور) دكتور/ محمد الجبوشي	وزارة النقل Ministry of Transport and Public Works	الهيئة العامة للطرق والكباري (GARB)

Contractor Company			Designer Company		
Issued by Contractor	Name	Sign	Date	Time	
	Eng/ Karam	K.A	7/3/2023		
Received by ER			MIR	C1	C2
				C3	DD
				MM	YY
				HH	MM

CODE-1	S1 to S21 Station Reference	D1 to S3 Depot Reference	Kp XXX Note For Kilometer point only Start Km is used
CODE-2	Work Activity		
CODE-3	Sub Element of Activity		

Description of Materials	Fill material results				
Location to be Used	483+740 484+000 PSG1 483+640 483+740 PSG1 483+040 483+240 PSG1 483+240 483+440 PSG1 483+440 483+640 PSG1 481+000 481+260 PSG1				
MAF Approval No				Date	
Supplier Name					
Test Requirement	Specification			Clause	
Reference Photos	Yes attached / No	Other			
Item	Description	Unit	Quantity	Arrival Date	Note
1	L.L & P.L & O.M.C %	m3	5000		
2	Proctor	m3	5000		
3	Classification	m3	5000		
4	Seive analysis	m3	5000		
Comments by:			Comments by:		
A sample has been taken from fill material by SGAC office to COMIBASSAL lab and the results founded meet the specifications and accepted					
APPROVAL STATUS					
Organisation	Name	Sign	Date	A-AWC-R	
Contractor	Karam	K.A			
QA/QC *	M. Adel	M. Adel			
GARB **	M. Negm				
Comment by ER					
Employers Representative					

* Designer

** Alignment / Bridges: Culvert Only

STATION			1151							QUANTITY TEST
FORM	TO	LEVEL	PROCTOR	SEIVE ANYLISES	LL,PL,PI	OMC	CBR	SIEVE NO. 200	SOIL CLASSIFICATION	
483+740	481+000	P5G1								(7/3/2023) 44001 27,7
483+640	483+740	P5G1								
483+040	483+240	P5G1								
483+240	483+440	P5G1								
483+440	483+640	P5G1								
481+000	481+260	P5G1	2.114		NP	5.30%				5000 m3
			93.00%							5000 m3

STATION		TEST							QUANTITY TEST	
FORM	TO	LEVEL	PROCTOR	SEIVE ANALYSES	LL, PL, PI	OMC	CBR	SIEVE NO. 200		SOIL CLASSIFICATION
										(25/11/2022) العين/عرب
483+000		-1.25							A-1-A	
480+500	480+740	-2.50								
483+020		-1.50								
482+840	482+980	-0.75								
480+320	480+600	-2.00								
										5000
										5000 m3



COMIBASSAL International Controllers

Internal inspection and laboratories sector

Accredited by : Egypton General Authority for Petroleum under No. 34/29-11-2011

I- Introduction

Project	:	Electric express train from ALAin Sokhna to Marsa Matrouh
General Consultant	:	SYSTRA
Consultant	:	د/ سعد الجبوشي
Contractor	:	شركة الفتح للشحن والتفريغ والأعمال البحرية
Sample	:	Prepare Sub-Grade
Station	:	From (480+000) to (484+000) - (5000 m ³)
Date of Test	:	07/03/2023
QC	:	1266-1

II- Sample description:

Crushed stone and sand

III- Required tests

- 1- Grain size analysis and classification
- 2- Modified compaction (Proctor test)
- 3- Liquid limit, plastic limit and plasticity index
- 4- California bearing ratio (CBR)
- 5- Specific gravity (SG)
- 6- Los Angeles test

IV- Results

1- Grain size analysis and classification	Grain size analysis	As showed in appendix
	Classification	A-1-a
2- Modified compaction (Proctor test)	MDD	2.174
	OMC	5.3%
3- Liquid limit, plastic limit and plasticity index	LL	Non plastic
	PL	Non plastic
	PI	Non plastic
4- California bearing ratio (CB)	CBR ratio	93%
5- Specific gravity (SG), absorption and degradation	S S D	2.501
	Absorption	1.2%
	Degradation	0.2%
6- Los Angeles test	Abrasion ratio	26.2%

LAB DIRECTOR

Eng / Eman kandil

Geotechnical consultant

Dr. Mohamed Mostafa Badry

Kilo 23 Alexandria - Cairo Desert Road - Merghem

Tel: 002 03 4704595 - 032 03470 191

Email : civdept@comibassal.com

WebSite : www.comibassal.com



49 El Horria Ave. Alex, Egypt

Tel: 032 033920176 - 002 033931482

Fax :002 033900476

Email : internal-inspection@comibassal.com



COMIBASSAL International Controllers

Internal inspection and laboratories sector

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Accredited by : Egypt Accreditation council (EGAC) under No. 031706/1A

APPENDIX



COMIBASSAL International Controllers

Internal inspection and laboratories sector

Accredited by : Egypt General Authority for Petroleum under No. 34/29-11-2011
Accredited by : Egypt Accreditation council (EGAC) under No. 031706/1A

Modified Proctor Test Report

ASTM - D 1557

Mould Number :- 2
Volume of mould = 2188 cm³
Weight of mould = 7032 g
G.S = 2.51 g/cm³

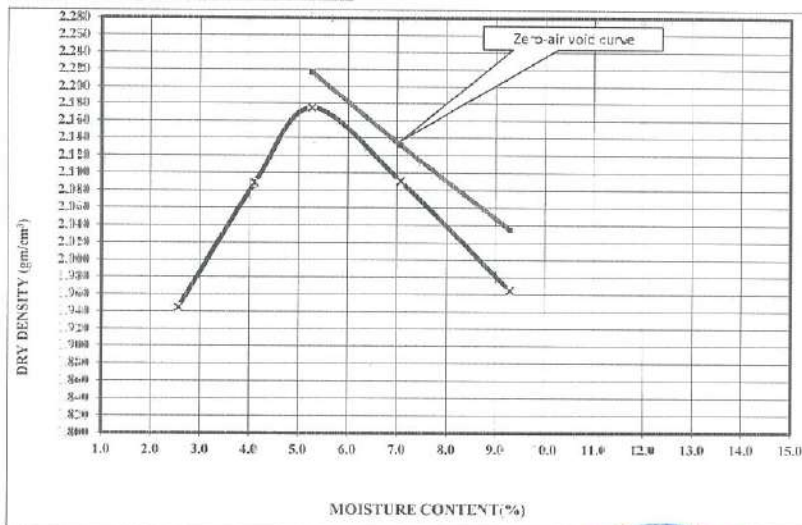
A- Density Calculations :-

	1	2	3	4	5
Weight of wet soil+mould (g)	11395	11790	12040	11930	11730
Weight of mould (g)	7032	7032	7032	7032	7032
Weight of wet soil (g)	4363	4758	5008	4898	4698
Volume of mould (cm ³)	2188	2188	2188	2188	2188
Wet density (g/cm ³)	1.994	2.175	2.289	2.239	2.147
Dry density (g/cm ³)	1.944	2.089	2.174	2.091	1.965
Zero-air Void curve			2.217	2.132	2.035

B- Moisture Calculations :-

Weight of wet soil (g)	200.0	200.0	200.0	200.0	200.0
Weight of dry soil (g)	195.0	192.1	190.0	186.8	183.0
moisture content%	2.6	4.1	5.3	7.1	9.3

C - Dry density-Moisture relationship:-



M.D.D= 2.174 gm/cm³
O.M.C= 5.3 %





COMIBASSAL International Controllers

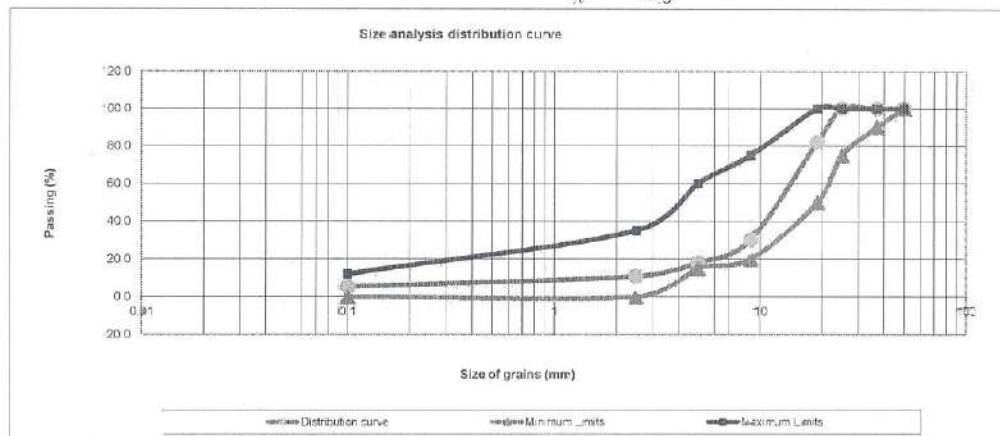
Internal inspection and laboratories sector

Accredited by : Egypt General Authority for Petroleum under No. 34/29-11-2011
Accredited by : Egypt Accreditation council (EGAC) under No. 031706/1A

PARTICLE SIZE DISTRIBUTION ANALYSIS ASTM C-136 / AASHTO T27

	WEIGHT RETAINED (gm)	CUMULATIVE WEIGHT RETAINED (gm)	CUMULATIVE PERCENTAGE RETAINED (%)	CUMULATIVE PERCENTAGE PASSING (%)	STANDARD SPECIFICATION LIMITS	
5	0.00	0.00	0.00	100.0	100	100
4	0.00	0.00	0.00	100.0	90	100
3	0.00	0.00	0.00	100.0	75	100
1.5	1640.00	1640.00	17.83	82.2	60	100
3/4	3190.00	6408.00	69.67	30.3	20	75
3/8	1140.00	7548.00	82.06	17.9	15	60
No.10	199.00	199.00	39.80	10.8	0	35
No.200	353.00	353.00	70.60	5.3	0	12

Total sample weight = 9198.00 pass No.3/8= 1650.0 Total fine aggregates weight = 500 gm
% = 7.9



Soil classification: A - 1 - a (Non-Plastic)





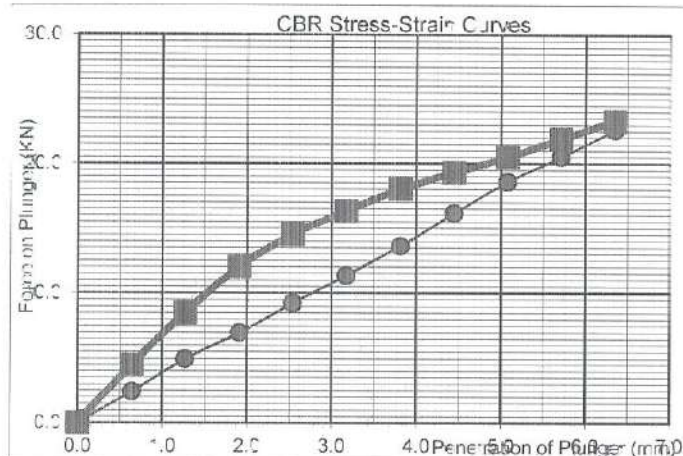
COMIBASSAL International Controllers

Internal inspection and laboratories sector

Accredited by : Egypt General Authority for Petroleum under No. 34/29-11-2011
Accredited by : Egypt Accreditation Council (EGAC) under No. 031706/1A

Report Of CBR Test - ASTM - D 1883

NO OF BLOWS	56					
MOULD NO	1					
WT OF MOULD-SCIL	11985					
WT OF MOULD	7020					
WT OF SOIL	4965					
VOLUME OF MOULD	2188					
WET DENSITY	2.269					
MC before soaking		Weight of Rammer		4.54Kg		
TIN NO				MDD	Kg/m ³	2.174
WT OF WET SOIL-TIN	250.00			OMC	%	5.3
WT OF DRY SOIL-TIN	243					
WT OF WATER	7.00					
WT OF TIN	85					
WT OF DRY SOIL	157	2.125				
MOISTURE CONTENT	4.5					
DRY DENSITY	2.172					
Pen mm	97		Bearing (KN)		CBR	
0.00	0		56	FALSE	stander	56
0.64	245		2.4		0.0	
1.27	502		4.9		4.5	
1.91	710		7.0		8.5	
2.54	940		9.2		12.0	
3.17	1155		11.3		14.5	70
3.81	1390		13.6		16.3	
4.45	1645		16.1		18.0	
5.08	1895		18.6		19.3	
5.71	2090		20.5		20.5	93
6.35	2305		22.6		21.9	
					23.3	





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Absorption & Specific Gravity for Aggregate AASHTO T85 - ASTM C127

Weight of sample	2500
Weight of saturated - dry surface sample (B)	2524
Weight of saturated sample in water (C)	1515
Weight of dry sample after heating (A)	2495

Results:-

Saturation surface dry specific gravity = $B / (B - C)$	2.501
Bulk specific gravity = $A / (B - C)$	2.473
Apparent specific gravity = $A / (A - C)$	2.546
Absorption of water = $(B - A) / A * 100$	1.2
Degradation of aggregate = $(2500 - A) / A * 100$	0.2





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Internal inspection and laboratories sector

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ABRASION AND IMPACT " LOS ANGELES " TEST

(For coarse aggregate)

ASTM- C 131-96 / AASHTO-T-96

Speed	Rotate at 30 to 33 Rpm For 500 Revolution
Trial Grading	A
Intitial Weight (W1) gms	5000
Weight of tested sample (W2) gms Retained on sieve No.12	3690
% abrasion By Weight Passing from Sieve No.12	26.2%



MATERIAL INSPECTION REQUEST					
	الهيئة العامة للطرق والكباري (GARB)	وزارة النقل	مركز الدراسات الهندسية للنقل والمطارات والبحري (مركز الدراسات والبحري)	وزارة النقل	وزارة النقل

Contractor Company	Designer Company																	
Issued by Contractor	Name: <u>Karam</u> Sign: <u>[Signature]</u> Eng/ <u>Karam</u>	Date: <u>10/3/2023</u> Time: <u></u>																
Received by ER	MIR	<table border="1"> <tr> <td>C1</td> <td>C2</td> <td>C3</td> <td>DD</td> <td>MM</td> <td>YY</td> <td>HH</td> <td>MM</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	C1	C2	C3	DD	MM	YY	HH	MM								
C1	C2	C3	DD	MM	YY	HH	MM											

CODE-1	S1 to S21 Station Reference	D1 to S3 Depot Reference	Kp XXX Note For Kilometer point only Start Km is used
CODE - 2	Work Activity		
CODE - 3	Sub Element of Activity		

Description of Materials	Fill material results				
Location to be Used	481+260 481+400 PSG1 481+400 481+660 PSG1 481+660 481+900 PSG1		482+480 482+600 PSG1 482+600 482+800 PSG1 482+800 482+980 PSG1 481+940 482+260 PSG1		
MAR Approval No			Date		
Supplier Name					
Test Requirement	Specification		Cause		
Reference Photos	Yes attached / No		Other		
Item	Description	Unit	Quantity	Arrival Date	Note
1	C B.R	m3	5000		
2					
3					
4					
Comments by:		Comments by:			
A sample has been taken from fill material by SGAC office to (COMIBASSAL) lab and the results founded meet the specifications and accepted					
APPROVAL STATUS					
Organisation	Name	Sign	Date	A-AWC-R	
Contractor	<u>Karam</u>	<u>[Signature]</u>			
QA/QC *	<u>M. Adel</u>	<u>[Signature]</u>			
GARB**	<u>M. Negm</u>	<u>[Signature]</u>			
Comment by ER					
Employers Representative					

* Designer

** Alignment / Bridges: Culvert Only

FA-M-65

Contractor Company			Designer Company					
Issued by Contractor	Name	Sign	Date	Time				
	Eng/ <i>Karam</i>	<i>Karam</i>	10/3/2023					
Received by ER								
			MIR	C1	C2	C3	DD	MM

CODE-1	S1 to S21 Station Reference	D1 to S3 Depot Reference	Kp XXX Note For Kilometer point only Start Km is used
CODE - 2	Work Activity		
CODE - 3	Sub Element of Activity		

Description of Materials	Fill material results				
Location to be Used 481+260 481+400 PSG1 481+400 481+660 PSG1 481+660 481+900 PSG1	482+480 482+600 PSG1 482+600 482+800 PSG1 482+800 482+980 PSG1 481+940 482+260 PSG1				
MAR Approval No			Date		
Supplier Name					
Test Requirement	Specification		Cause		
Reference Photos	Yes attached / No		Other		
Item	Description	Unit	Quantity	Arrival Date	Note
1	L.L & P.L & O.M.C %	m3	5000		
2	Proctor	m3	5000		
3	Classification	m3	5000		
4	Seive analysis	m3	5000		
Comments by:		Comments by:			
Asample has been taken form fill material by SGAC office to COMIBASSAL lab and the results founded meet the specificonctions and accepted					
APPROVAL STATUS					
Organisation	Name	Sign	Date	A-AWC-R	
Contractor	<i>Karam</i>	<i>Karam</i>			
QA/QC *	<i>M. Adel</i>	<i>M. Adel</i>			
GARB**	<i>M. Neem</i>	<i>M. Neem</i>			
Comment by ER					
Employers Representative					

* Designer
 ** Alignment / Bridges: Culvert Cn y

STATION			TEST							QUANTITY TEST	
FORM	IU	LEVEL	PROCTOR	SEIVE ANALYSES	LL,PL,PI	OMC	CBR	SIEVE NO. 200	SOIL CLASSIFICATION		
481+260	481+400	PSG1								A-1-A	5000 m3
481+400	481+660	PSG1									
481+660	481+900	PSG1									
482+480	482+600	PSG1									
482+600	482+800	PSG1									
482+800	482+980	PSG1									5000 m3
481+940	482+260	PSG1									
92.00%											5000 m3



COMIBASSAL International Controllers

Internal inspection and laboratories sector

Accredited by : Egypt General Authority for Petroleum under No. 34/29-11-2011

I- Introduction

Project	:	Electric express train from ALAin Sokhna to Marsa Matrouh
General Consultant	:	SYSTRA
Consultant	:	د/ سعد الجيوشي
Contractor	:	شركة الفتح للشحن والتفريغ والأعمال البحرية
Sample	:	Prepare Sub-Grade
Station	:	From (480+000) to (484+000) - (5000 m ³)
Date of Test	:	10/03/2023
QC	:	1266-2

II- Sample description:

Crushed stone and sand

III- Required tests

- 1- Grain size analysis and classification
- 2- Modified compaction (Proctor test)
- 3- Liquid limit, plastic limit and plasticity index
- 4- California bearing ratio (CBR)
- 5- Specific gravity (SG)
- 6- Los Angeles test

IV- Results

1- Grain size analysis and classification	Grain size analysis	As showed in appendix
	Classification	A-1-a
2- Modified compaction (Proctor test)	MDD	2.173
	OMC	5.70%
3- Liquid limit, plastic limit and plasticity index	LL	Non plastic
	PL	Non plastic
	PI	Non plastic
4- California bearing ratio (CB)	CBR ratio	92%
5- Specific gravity (SG), absorption and degradation	S S D	2.500
	Absorption	1.2%
	Degradation	0.2%
6- Los Angeles test	Abrasion ratio	26.2%

LAB DIRECTOR

Eng / Eman kandil

Eman



Geotechnical consultant

For Dr. H.

Dr. Mohamed Mestafa Badry

Kilo 23 Alexandria - Cairo Desert Road - Merghem

Tel: 002 03 4704595 - 002 034701191

Email : civdept@comibassal.com

WebSite : www.comibassal.com



49 El Horria Ave. Alex, Egypt

Tel: 002 033920176 - 002 033931482

Fax : 002 033900476

Email : internal-inspection@comibassal.com



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Internal inspection and laboratories sector

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Accredited by : Egypt Accreditation council (EGAC) under No. 031706/1A

APPENDIX



COMIBASSAL International Controllers

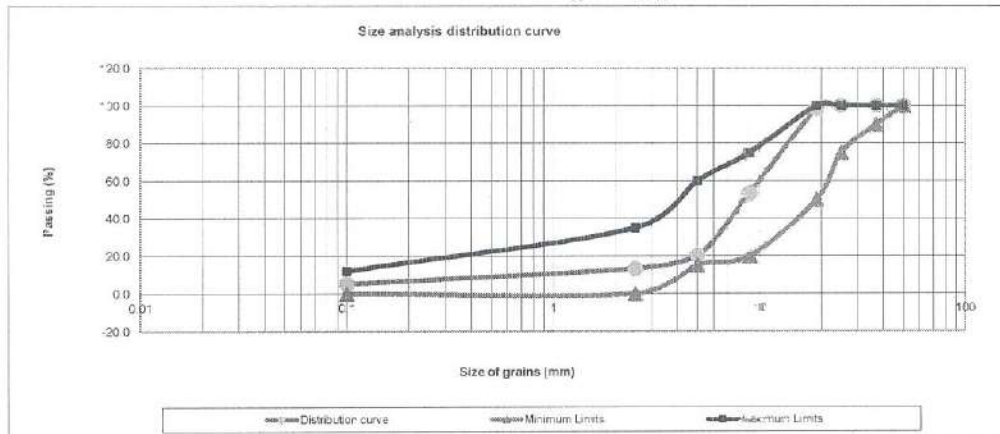
Internal inspection and laboratories sector

Accredited by : Egypt General Authority for Petroleum under No. 34/29-11-2011
Accredited by : Egypt Accreditation council (EGAC) under No. 031706/1A

PARTICLE SIZE DISTRIBUTION ANALYSIS ASTM C-136 / AASHTO T27

	WEIGHT RETAINED	CUMULATIVE WEIGHT	CUMULATIVE PERCENTAGE RETAINED (%)	CUMULATIVE PERCENTAGE PASSING (%)	STANDARD SPECIFICATION LIMITS	
	(gm)	RETAINED (gm)	RETAINED (%)	PASSING (%)		
5	0.00	0.00	0.00	100.0	100	100
4	0.00	0.00	0.00	100.0	90	100
3	0.00	0.00	0.00	100.0	75	100
1.5	163.50	163.50	1.74	98.3	60	100
3/4	2638.50	4389.00	46.50	53.5	20	75
3/8	3127.10	7507.00	79.70	20.3	15	60
No.10	172.00	172.00	34.40	13.3	0	35
No.200	375.00	375.00	75.00	5.1	0	12

Total sample weight = 9419.10 pass No.3% = 3490.0 Total fine aggregates weight = 500 gm
% 37.1



Soil classification: A - 1 - a (Sample is non plastic)





COMIBASSAL International Controllers

Internal inspection and laboratories sector

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Modified Proctor Test Report ASTM - D 1557

Mould Number :- 1
Volume of mould = 2150 cm³
Weight of mould = 7043.5 g
G.S = 2.52 g/cm³

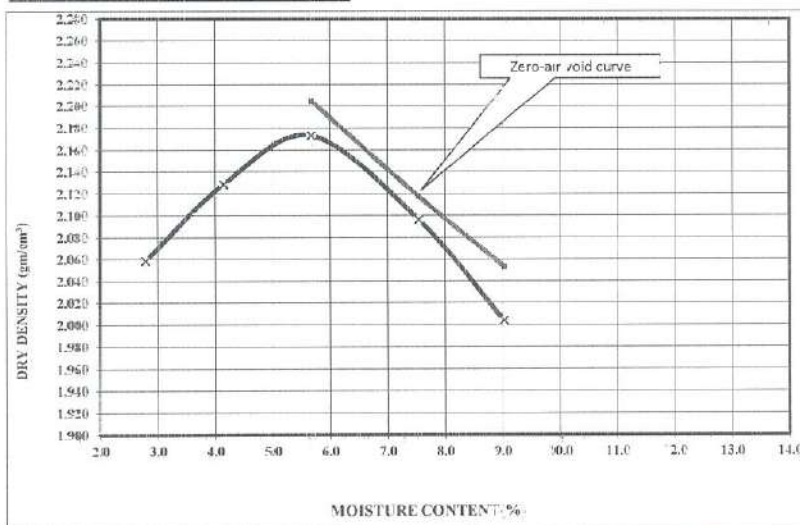
A- Density Calculations :-

	1	2	3	4	5
Weight of wet soil-mould (g)	11592	11810	11980	11890	11740
Weight of mould (g)	7043.5	7043.5	7043.5	7043.5	7043.5
Weight of wet soil (g)	4548.5	4766.5	4936.5	4846.5	4696.5
Volume of mould (cm ³)	2150	2150	2150	2150	2150
Wet density (g/cm ³)	2.116	2.217	2.296	2.254	2.184
Dry density (g/cm ³)	2.058	2.129	2.173	2.096	2.004
Zero-air Void curve			2.205	2.118	2.053

B- Moisture Calculations :-

Weight of wet soil (g)	250.0	250.0	250.0	250.0	250.0
Weight of dry soil (g)	245.5	243.5	241.0	238.5	238.0
moisture content(%)	2.8	4.2	5.7	7.5	9.0

C - Dry density-Moisture relationship:-



M.D.D= 2.173 gm/cm³
O.M.C= 5.70 %





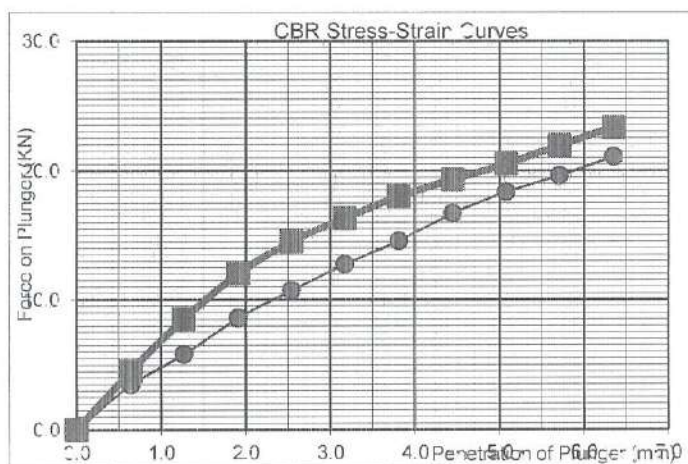
COMIBASSAL International Controllers

Internal inspection and laboratories sector

Accredited by : Egypt General Authority for Petroleum under No. 34/29-11-2011
Accredited by : Egypt Accreditation council (EGAC) under No. 031706/1A

Report Of CBR Test - ASTM - D 1883

NO OF BLOWS	56					Swell %	
MOULD NO	1					56	
WT OF MOULD+SO L	11980			Start	0.00		
WT OF MOULD	7043.5			End	0.00		
WT OF SCIL	4936.5			Swell	0.00		
VOLUME OF MOULD	2150						
WET DENSITY	2.296						
	MC before soaking			Weight of Rammer		4.54Kg	
TIN NO	1			MDD	Kg/m ³	2.173	
WT OF WET SCIL+TIN	250.00						
WT OF DRY SO L+TIN	241			OMC	%	5.7	
WT OF WATER	9.00						
WT OF TIN	82.5			PROTECTOR RING			
WT OF DRY SO L	158.5	2.125		Diw	KN		
MOISTURE CONTENT	5.7						
DRY DENSITY	2.173			Capacity (KN)		50	
Per mm	97			Bearing (KN)		CBR	
0.00	0		56	standar	56		
0.64	350		FALSE	0.0			
1.27	590		3.4	4.5			
1.91	875		5.8	8.5			
2.54	1090		8.6	12.0			
3.17	1297		10.7	14.5	21		
3.81	1485		12.7	16.3			
4.45	1700		14.6	18.0			
5.08	1870		16.7	19.3			
5.71	2000		18.3	20.5	22		
6.35	2150		19.6	21.9			
			21.1	23.3			





COMIBASSAL International Controllers Internal inspection and laboratories sector

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Absorption & Specific Gravity for Aggregate AASHTO T85 - ASTM C127

Weight of sample	2500
Weight of saturated - dry surface sample (B)	2525
Weight of saturated sample in water (C)	1515
Weight of dry sample after heating (A)	2495

Results:-

Saturation surface dry specific gravity = $B / (B-C)$	2.500
Bulk specific gravity = $A / (B-C)$	2.470
Apparent specific gravity = $A / (A-C)$	2.546
Absorption of water = $(B-A)/A \times 100$	1.2
Degradation of aggregate = $(2500-A)/A \times 100$	0.2





COMIBASSAL International Controllers

Internal inspection and laboratories sector

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ABRASION AND IMPACT " LOS ANGELES " TEST

(For coarse aggregate)

ASTM- C 131-96 / AASHTO-T-96

Speed	Rotate at 30 to 33 Rpm For 500 Revolution
Trial Grading	A
Intital Weight (W1) gms	5000
Weight of tested sample (W2) gms Retained on sieve No.12	3690
% abrasion By Weight Passing from Sieve No.12	26.2%



السيد المهندس / رئيس قطاع التنفيذ والمناطق

تحية طيبة.. وبعد،،

بالإحالة إلى مشروع القطار الكهربائي فائق السرعة (العلمين - فوكه) (القطاع السادس)
نتشرف بأن نرفق لسيادتكم طيه المقايسة المعدلة بعد المفاوضة للقطاعات الآتية:

مسلسل	اسم الشركة	بداية القطاع (كم)	نهاية القطاع (كم)	اتجاه
1	الفتح للشحن والتفريغ والأعمال البحرية	400+600	406+600	سيدي براني

برجاء من سيادتكم التفضل بالأحاطه والتوجيه بالازم

وتفضلوا بقبول فائق الاحترام والتقدير،،

رئيس الإدارة المركزية

المنطقة الخامسة- غرب الدلتا

عميد مهندس /
"هاني محمد محمود طه"



قائمة الكميات الواردة بالمستخلص جاري (2)

مشروع القطار الكهربائي السريع (العين السخنة - العاصمة الإدارية - العلمين - مطروح)
قطاع غرب النيل لتنفيذ المسافة من الكم 400+600 الي الكم 406+600 كم بطول 6 كيلو متر اتجاه سيدي براني .
رقم البند و بيانه : (1 - 4) بالمتر المكعب أعمال توريد وتشغيل طبقة اساس ومطابقة للمواصفات والتشغيل .
تنفيذ : شركة الفتح للشحن والتفريغ والاعمال البحرية

مقدار العمل السابق : 0.0 م 3

الكمية	الابعاد (متر)		الموقع الكيلومتری		بيان الاعمال بالمقايضة
	مساحة المقطع	طول	الى	من	
1085.963	2.17	500	401+100	400+600	القطاع الأول
1085.963	2.17	500	401+600	401+100	القطاع الثاني
1085.963	2.17	500	402+100	401+600	القطاع الثالث
1085.963	2.17	500	402+600	402+100	القطاع الرابع
1085.963	2.17	500	403+100	402+600	القطاع الخامس
1085.963	2.17	500	403+600	403+100	القطاع السادس
1085.963	2.17	500	404+100	403+600	القطاع السابع
1085.963	2.17	500	404+600	404+100	القطاع الثامن
1085.963	2.17	500	405+100	404+600	القطاع التاسع
1085.963	2.17	500	405+600	405+100	القطاع العاشر
1085.963	2.17	500	406+100	405+600	القطاع الحادي عشر
1085.963	2.17	500	406+600	406+100	القطاع الثاني عشر
13031.550	اجمالي الكميات خلال فترة المستخلص الحالية (م ³)				
13031.550	الاجمالي الكلي (م ³)				

مهندس الهيئة
م / إبراهيم الحناوى

مهندس الاستشاري
مكتب د. سعد الجيوشي

م / مصطفى نجم

مهندس الاستشاري
مدير مكتب XYZ

م / محمد خليل

مدير المشروع

م / حسن محمد

قائمة الكميات الواردة بالمستخلص جاري (2)

مشروع القطار الكهربائي السريع (العين السخنة - العاصمة الإدارية - العلمين - مطروح)
قطاع غرب النيل لتنفيذ المسافة من الكم 400+600 الي الكم 406+600 كم بطول 6 كيلو متر اتجاه سيدي براني .

رقم البند و بيانه : (1 - 4) علاوة مسافة النقل 120 كم

تنفيذ : شركة الفتح للشحن والتفريغ والاعمال البحرية

مقدار العمل السابق : 0.0 3م

الكمية	الابعاد (متر)		الموقع الكيلومتری		بيان الاعمال بالمقايضة
	مساحة المقطع	طول	الى	من	
1085.963	2.17	500	401+100	400+600	القطاع الأول
1085.963	2.17	500	401+600	401+100	القطاع الثاني
1085.963	2.17	500	402+100	401+600	القطاع الثالث
1085.963	2.17	500	402+600	402+100	القطاع الرابع
1085.963	2.17	500	403+100	402+600	القطاع الخامس
1085.963	2.17	500	403+600	403+100	القطاع السادس
1085.963	2.17	500	404+100	403+600	القطاع السابع
1085.963	2.17	500	404+600	404+100	القطاع الثامن
1085.963	2.17	500	405+100	404+600	القطاع التاسع
1085.963	2.17	500	405+600	405+100	القطاع العاشر
1085.963	2.17	500	406+100	405+600	القطاع الحادي عشر
1085.963	2.17	500	406+600	406+100	القطاع الثاني عشر
13031.550	اجمالي الكميات خلال فترة المستخلص الحالية (م ³)				
13031.550	الاجمالي الكلي (م ³)				

مهندس الهيئة
م / إبراهيم الحناوى

مهندس
الاستشاري
مكتب د. سعد
الجيوشي

م / مصطفى نجم

مهندس الاستشاري
مدير مكتب XYZ

م / محمد خليل

مدير المشروع

م / حسن محمد

قائمة الكميات الواردة بالمستخلص جاري (2)

مشروع القطار الكهربائي السريع (العين السخنة - العاصمة الإدارية - العلمين - مطروح)
قطاع غرب النيل لتنفيذ المسافة من الكم 400+600 الي الكم 406+600 كم بطول 6 كيلو متر اتجاه سيدي براني .
رقم البند و بيانه : (1 - 4) علاوة تحصيل رسوم الكارثة والموازين طبقاً للائحة الشركة الوطنية
تنفيذ : شركة الفتح للشحن والتفريغ والاعمال البحرية

مقدار العمل السابق : 0.0 م 3

الكمية	الابعاد (متر)		الموقع الكيلومتری		بيان الاعمال بالمقايضة
	مساحة المقطع	طول	الى	من	
1085.963	2.17	500	401+100	400+600	القطاع الأول
1085.963	2.17	500	401+600	401+100	القطاع الثاني
1085.963	2.17	500	402+100	401+600	القطاع الثالث
1085.963	2.17	500	402+600	402+100	القطاع الرابع
1085.963	2.17	500	403+100	402+600	القطاع الخامس
1085.963	2.17	500	403+600	403+100	القطاع السادس
1085.963	2.17	500	404+100	403+600	القطاع السابع
1085.963	2.17	500	404+600	404+100	القطاع الثامن
1085.963	2.17	500	405+100	404+600	القطاع التاسع
1085.963	2.17	500	405+600	405+100	القطاع العاشر
1085.963	2.17	500	406+100	405+600	القطاع الحادي عشر
1085.963	2.17	500	406+600	406+100	القطاع الثاني عشر
13031.550	اجمالي الكميات خلال فترة المستخلص الحالية (م ³)				
13031.550	الاجمالي الكلي (م ³)				

مهندس الهيئة
م / إبراهيم الجنواي

مهندس
الاستشاري
مكتب د. سعد
الجيوشي
م / مصطفى نجم

مهندس الاستشاري
مدير مكتب XYZ

م / محمد خليل

مدير المشروع

م / حسن محمد